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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,665	05/14/2001	Mordechai Segal	TI-30245	1323
23494	7590	09/07/2006	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			LUGO, DAVID B	
			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/674,665	SEGAL ET AL.	
	Examiner	Art Unit	
	David B. Lugo	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/1/06 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 23-30 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 23, 26, 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beyers, II et al. U.S. Patent 5,235,619 in view of Benelli (previously cited) and Balachandran et al. U.S. Patent 6,778,558.

Regarding claims 23 and 27, Beyers discloses a communication arrangement for communicating data using a cable television transmission medium where a transmitter will transmit the same data on a plurality of channels (col. 18, lines 4-13), where the transmitter will transmit on a plurality of different channels each time data is transmitted (col. 19, lines 6-8). Beyers, however, does not expressly illustrate a 1:N rate encoder along with a transmission arrangement for implementing the diversity scheme of reproducing the symbol N times and

transmitting each reproduced symbol using a distinct transmission channel. Benelli discloses such an arrangement in Figure 1 which shows a 1:N rate encoder (coder) coupled to an input data stream and configured to reproduce a symbol N times, and a transmission arrangement configured to use a plurality of outputs to transmit each symbol using a distinct channel (channels 1-m), where a receiver is coupled to the outputs of the transmission arrangement for combining the signals via a signal combiner to output an estimate of the symbol. It would have been obvious to one of ordinary skill in the art to use an arrangement as taught by Benelli to implement the diversity scheme of Beyers because using such an arrangement helps reduce BER even when noise is significant, as stated by Benelli on page 1530, "Introduction," first paragraph.

Beyers in combination with Benelli, while showing a receiver for combining the received signals (see Benelli, Fig. 1), do not disclose that the receiver performs joint equalization and soft-combining. Balachandran discloses a receiver that combines multiple received copies of a data signal to increase the likelihood of correct decoding, which is described as soft combining of the signal (col. 1, lines 24-29). Accordingly, the combining of the signals disclosed by Beyers and Benelli is a soft combining. Balachandran further discloses jointly equalizing the received signal (col. 8, lines 17-31). It would have been obvious to one of ordinary skill in the art to perform joint equalization and soft combining of the received signal as disclosed by Balachandran in the system of Beyers and Benelli because joint equalization allows for the offsetting of severe ISI, as is well known in the art of communications.

Regarding claims 26 and 30, Beyers further discloses that Miller (delay) data encoding with BPSK modulation is used (col. 20, lines 66-68), where BPSK is a scheme where a plurality of information bits are used to represent a symbol.

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5. Claims 24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beyers, II et al. in view of Benelli and Balachandran et al. as applied to claims 23 and 27 above, and further in view of Kaewell, Jr. et al. U.S. Patent 5,402,451 (previously cited).

Regarding claims 24 and 28, Beyers in combination with Benelli and Balachandran disclose a communication arrangement employing soft combining, as described above, but do not expressly the type of soft-combining. Kaewell discloses a diversity combiner where soft-combining of the signals is performed using weighted combining (col. 2, lines 52-56). It would have been obvious to one of ordinary skill in the art to use the weighted soft-combining of signals as taught by Kaewell in the system of Beyers in combination with Benelli and Balachandran because such combining allows for the best set of diversity combining weights to be determined for different operating environments (col. 1, lines 51-53).

6. Claims 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beyers, II et al. in view of Benelli and Balachandran et al. as applied to claims 23 and 27 above, and further in view of Lathrop U.S. Patent 5,701,427 (previously cited).

Regarding claims 25 and 29, Beyers in combination with Benelli and Balachandran disclose a communication arrangement as described above, but do not expressly disclose transmitting an original message using one of the channels and performing retransmission using a remaining channel.

Lathrop discloses a communication arrangement where an information message is transmitted over a channel on a communications link 12, and a second retransmit channel is used to transmit retransmission information (col. 7, lines 22-33). It would have been obvious to one of ordinary skill in the art to use the teaching of Lathrop of a channel for retransmission that is

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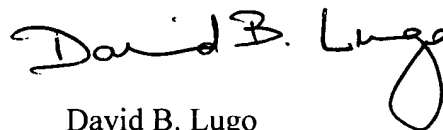
separate from that used to transmit an original message in order to allow for retransmission of data not accurately received without interrupting the transmission of the original message.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David B. Lugo whose telephone number is 571-272-3043. The examiner can normally be reached on M-F; 9:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink that reads "David B. Lugo". The signature is fluid and cursive, with the first letters of each name being capitalized and prominent.

David B. Lugo
Patent Examiner

9/5/06